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From the above quotations it will be seen that the ideas of those who are inclined to draw unjust comparisons between "mere taxonomy" and other phases of botanical work are not modern; neither are they restricted to this country but were current in England fifty years ago.

F. J. SEAVER

## REVIEWS

### **Pammel's Manual of Poisonous Plants\***

A Manual of Poisonous Plants is the title of a book recently published by L. H. Pammel, in which the author brings together into one volume most of the literature pertaining to plants injurious to man and to live stock.

The astonishing size of the book is explained on the first page of the foreword, thus: "I have placed the broadest interpretation on the subject and have, therefore, included all plants that are injurious, although many of these are not known to produce poisons, some even being most useful economic plants, and yet injurious to some people." Later on Pammel also says: "During the last decade, there has been much interest manifested in regard to plants injurious to live stock." I quote this as showing not only the trend of the author's thought, but to account, in part, for the great size of the volume.

The first chapter is headed "Poisons and Statistics on Poisons" and contains such sub-headings as "Ancient Use of Poisons," "The Rise of Chemistry and Poisons," "Ratzenburg on Poisonous Plants," "Statistics on Poisoning," "Statutes on Poisoning" and "Actions of Poisons on Different Animals." Under "Statistics of Poisoning" is given the number of persons dying by taking active poisons and by inhaling illuminating gas, and the poisonous cases reported among live stock in Montana during 1900. There are only seven pages in this chapter and the different subjects are treated so briefly that the information is necessarily very meagre.

\* Pammel, L. H. *Manual of Poisonous Plants*. Pp. 1-977. f. 1-458 + many unnumbered figures and plates. The Torch Press, Cedar Rapids, Iowa. 1911. \$7.00.

In the second chapter, under "Bacterial Poisons" impure water is considered as a source of disease, citing cases of poisoning among cattle resulting from drinking polluted water. Other subjects considered are botulism,—poisoning resulting from the action of *Bacillus botulinus*, which occurs in spoiled ham and sausage. Ptomaine poisoning is briefly considered, followed by a discussion of madismûs,—poisoning resulting from eating spoiled Indian corn.

Chapters III, IV, VI, VII, VIII and IX are, except in a few instances, a treatise on veterinary practice. In these chapters appear such headings as "Dermatocytosis," explaining the causes, symptoms and treatment of skin diseases in the lower animals, considering among others, the ring worm of the horse in great detail, "Forage Poisoning," "Equisetosis," "Locoism," "Lupinosis," "Delphinosis," "Aconitism" and "Veratrim." The symptoms of poisoning as they occur in the live stock, together with the methods of treatment, are usually given in minute detail, which information is, of course, very valuable to the veterinarian, in diagnosing and treating cases of poisoning.

Chapter V, "Poisoning from Fungi," is mostly a discussion of reported cases of poisoning. The author states that it has been reported that a given fungus is sometimes eaten with impunity, while at other times it proves fatal. The author doubts if the same species were eaten in both cases, and that it would be impossible for a fungus to be poisonous at one time and not at another. Professor Peck, I believe this year, demonstrated that a fungus may develop poisonous properties when grown in one locality and when grown in another section of the country be edible and harmless.

In Chapter X, under "Poisoning from Flowers," reference is made to *Prunus serotina*, *Stapelia*, *Smilax herbacea*, *Polyanthes tuberosa*. On page 64, the author states that "The flowers of *Magnolia grandiflora* are overpowering, according to some authorities." Odors undoubtedly affect people differently; an odor which is disagreeable to one person may be pleasing to another. Asafoetida, which is displeasing to most people, becomes very pleasing on repeated handling. Asafoetida is used

among our southern negroes, not for its medicinal value, but for its odor and the belief that if carried about the person, it will ward off illness and bring good luck.

Under the sub-heading "Poisoning from Honey," it is stated that *Kalmia latifolia*, *Robinia pseud-acacia*, *Euphorbia marginata*, and species of rhododendron have been proved as sources of poisonous honey. The above facts should prove of value to bee keepers. The source of the honey of the market is not known except in a general way as clover, buckwheat, etc. A microscopic examination of honey will often reveal its source through the presence of characteristic pollen-grains.

The eleventh chapter is pure toxicology, giving a classification of poisons with symptoms and antidotes.

In Chapter XII, under "Distribution of Poisonous Substances in Plants," Dr. Pammel speaks of some of the conditions governing the formation (elaboration) of poisonous substances, *i. e.*, light, heat, seasons, climate and cultural conditions. The time (season) of collecting medicinal plants is of first importance. This time varies with different drugs. The reviewer usually groups the plant parts for purposes of collection as follows: tubercles, tubers, bulbs, rhizomes, and roots should be collected at the close of the growing season; barks in the fall, after the death of the foliage, or before the spring foliage is fully developed; flowers, just before expanding; leaves and herbs, just at the beginning of the flowering period and most of the fruits when immature, but full-grown, and the seeds when mature. Under "Culture" it is stated that cultivation often entirely eliminates the poisonous constituent. *Lycanthus*, *Phaseolus lunatus* and *Aconitum napellus* are cited as becoming less toxic under cultivation. This latter statement would seem to be disproved by the fact that the British Pharmacopoeia requires British pharmacists to use only cultivated aconite grown in England. Also much of the golden-seal of the market is collected from cultivated plants. Analyses show the alkaloid in cultivated golden-seal to be present in even greater amounts than in the wild variety. This shows that no definite law can be given. One of the most important factors in increasing the percentage of active con-

stituents in plants and a fact which is not mentioned, is in annually selecting for seed purposes, plants yielding the highest percentage of active constituents.

The thirteenth chapter deals with the algae in fresh-water supplies, specially with the working of the lakes and water bloom caused by various species of algae, chief among which are *Beggiatoa*, *Anabena*, *Lymbya* and *Clathrocystis*. The first remedy suggested for preventing these growths in reservoirs is to cover the reservoir. This, of course, is impracticable and would result in more harm than good if it were possible of application. The use of copper sulphate as an algicide is then considered.

Chapter XIV catalogues the more important poisonous plants of the United States and Canada. The material in this chapter is elaborated on and forms the basis of the second part. This part, consisting of 827 pages, includes all groups of plants from the bacteria to the flowering plants. In the beginning there is a key to the plant kingdom which is purely descriptive. This description is elaborated under each order. The plants considered poisonous are placed after the family; their description and habitat is given, and detailed descriptions of symptoms of poisoned animals and treatment as in Part I are frequently included.

This part is very broad in scope and names plants which are in daily use as staple articles of food, as rye, oats, wheat, and corn. These are mentioned as poisonous for the reason that when they are attacked by fungi they are injurious. The attack of the fungi completely changes the nature of their constituents and their structure, as is well illustrated by ergot. Ergot is no longer rye, but the resting stage of *Claviceps purpurea*. Such well-known fruits as pears, apples and peaches are classed as poisonous, as the seeds contain hydrocyanic acid and benz-aldehyde. The seeds and kernels are not the portion of these fruits which are eaten, but you can eat a limited amount of these parts with impunity. Yeast is considered poisonous on account of the alcohol produced by the action of its enzymes on sugar in solution. The alcohol is poisonous, not the yeast plant. Raspberries and blackberries are classed as poisonous, as there are several reported

accidents due to mechanical injuries. According to this logic, needles, knives and forks would be classed as poisonous in a list of poisonous metals. Then too, such common plants as dandelion, chickory and marsh marigold are cited, in spite of the fact that these plants form part of the diet of thousands of people. No one under normal conditions could be forced to eat sufficient burdock root, *hydrastis* or *berberis* to prove fatal. There are hundreds of plants listed in these pages which are practically harmless in their normal form, yet when altered, as when their active constituents are extracted, and when administered in concentrated form, may prove injurious, if not poisonous. These plants should not be classed as poisonous, however, merely because in their changed form they are harmful in excessive amounts. Most of these and similar plants should be, and usually are classed as medicinal. It is doubtless true that all the poisonous plants are medicinal, yet only a small percentage of the medicinal plants are poisonous, in the generally accepted sense of the term. A clear line should be drawn between the mechanical-toxic and the medicinal-non-toxic plants. I suppose there is scarcely a food plant which some time or other has not been reported injurious or harmful to some one. This, however, should not be the test as to whether a plant is poisonous or non-poisonous. This ground is untenable and has resulted in the inclusion of hundreds of plants in the present volumes which are universally conceded to be non-poisonous. It is the author's elastic use of the word poison which is to me the weak point of the book. The volume is concluded with a catalogue of the plants of the world, poisonous or injurious to man. This list, like the manual, contains hundreds of economic and relatively harmless plants.

The author has brought together in these two parts the results of experimentation and research carried on under the direction of the United States Department of Agriculture at various experiment stations, as well as portions of the work of such men as Nelson, Peters and Bessey. This in itself would make the volume valuable, but added to this is the knowledge and fertile experience of the author who has for many years been one of the chief exponents of this line of work.

Part Two is really a manual of economic, medicinal, and poisonous plants, the poisonous plants being treated from the toxicological and veterinary standpoints chiefly. While the book contains a fund of information valuable to the physician, botanist, and layman, its greatest usefulness will doubtless be to students of animal industry and in particular to the veterinary practitioner.

The great number of illustrations and half-tone plates add to the value of the book. The paper is good. The subject matter is nicely spaced and arranged, and printed in good readable type.

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**Scharff's Distribution and Origin of Life in America \***

This is an octavo book of 497 pages, including 32 of bibliography and 26 of index, both of which important features are comprehensive and well arranged for quick and easy reference. The illustrations, twenty-one in number, are maps, which are in part designed to indicate the theoretical land and water conditions in certain periods of Mesozoic and Neozoic time, and in part to show the known distribution, past and present, of certain specific and family types of animal life in America.

As a compendium of recognized facts in paleogeography and the distribution of the faunal elements discussed the work is useful and valuable; but in certain other respects it may better be designated merely as "interesting," especially in connection with some of the theories advanced by the author to account for some of the facts discussed, and the more or less *ex parte* manner in which authorities are cited and quoted in support of the author's views and contentions. In fact those who are not well acquainted with the literature of the subject might infer, from the text, that certain theories not generally accepted had a preponderating weight of authority in their favor.

In fairness to the author, however, it should be said that he is quite frank in disclaiming an unprejudiced attitude in relation

\* Scharff, R. S. Distribution and Origin of Life in America. Pp. i-xvi + 1-497, f. 1-21. New York, The Macmillan Company, 1912. Price \$3.00.